Effect of Mouthrinses on Surface Microhardness of Selected Dental Composites

Abstract

Objective: To compare the surface microhardness of composites(Spectrum®TPH, Filtek™Z350, Ceram•X mono and Ceram•X duo-enamel shade) before and after immersion in alcohol containing mouthrinses (Listerine), alcohol-free mouthrinses (Oral-B) and experimental herbal mouthrinses based on plant extract (mouthrinses X, Y and Z). Methods: 60 disc-shaped specimens of approximately 10mm x 2mm were perpared from various composites using perspex split mould and was cured for 40 seconds. The irradiated surface was polished using Sof-Lex pop-on polishing discs. The specimens were randomly divided to 6 groups. Microhardness was recorded before immersion (control group) using a load of 200g for 15 seconds using Vickers microhardness tester, (Shimadzu Corp, Kyoto, Japan). All specimens were then immersed in 20ml of Listerine,Oral B- Tooth and gum care alcohol-free mouth rinses, Experimental Mouth rinses X, Y and Z and distilled water for 24 hours at 37º C, after which micro hardness value was measured again. Data collected was analyzed using one-way ANOVA / Games-Howell post-hoc test for multiple comparisons between groups. Specimens were also subjected to surface analysis using AFM (Ambios Technology Universal Scanning Probe Microscopy™).Results: Filtek Z350 exhibited the highest Vickers microhardness number (VHN) and Ceram X Duo had the lowest VHN before immersion. All tested composite showed significant decreased in surface microhardness (VHN) compared to before immersion. Filtek Z350 showed the highest VHN and TPH Spectrum showed the lowest VHN after immersion. Ceram X Duo showed the roughest surface before immersion. The surface roughness of Ceram X Mono was high when immersed in experimental mouthrinses. Conclusions: Filtek Z350 exhibited significantly higher VHN compared to other composites tested. All composites showed significant decreased in VHN compared to before immersion. There was no significant different of VHN between mouthrinses, however it was material dependent. This study was supported by the Vot F:Grant no F0350/2005C, University of Malaya.

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Journal:	Journal of Dental Research
Year:	2006

Keywords :

Effect; Mouthrinses; Microhardness; Dental Composites; SELF-REPAIR; CULTURE-CONDITIONS; COMPOSITE RESIN; DENTAL PULP STEM CELL; FUNCTIONALLY GRADED DESIGN; MULTI LAYERED POST; FUNCTIONALLY GRADED DENTAL POST; SOFT SKILLS; CLINICAL PAIRING; DENTAL PULP STROMAL CELLS; LONG-TERM EXPANSION

Please cite as :

AHMAD, A. & ABU KASIM, N. H. 2006. **Effect of Mouthrinses on Surface Microhardness of Selected Dental Composites**. *Journal of Dental Research*.

URL :

- http://iadr.confex.com/iadr/sea07/preliminaryprogram/abstract_97216.htm